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Instructions



Therabath® PROFESSIONAL GRADE PARAFFIN BATH PRO®

*Soothes and softens hands,
elbows, feet, and more*

Service Manual for

- Model TB4 (220-volt), Snap Action Thermostat (S.A.S.) Assembly Replacement

Version 1.0, item no. MR81, rev. 2/21/05



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ISO 9001:2000
ISO 13485:1996

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Important Safeguards

— READ ALL INSTRUCTIONS BEFORE REPAIRING —

WARNING

- Repairs must be done by a qualified technician only.
- Failure to properly repair this device may cause injury to the user.
- This device must be repaired so that the bath maintains the temperature of the paraffin between the temperature limits stated within this manual.
- If the unit is repaired by anyone other than WR Medical Electronics Co. personnel, all warranties are voided.

CAUTION

- Because specialized equipment and techniques are required in order to properly repair this product, we recommend that all units be returned to the factory for repair.
- For repair advice, contact the factory service department at:
WR Medical Electronics Co.
123 North Second Street, Stillwater, MN 55082 USA
Phone: (651) 430-1200
FAX: (651) 439-9733
E-mail: paraffinbath@wrmed.com
Web Site: www.wrmed.com
- Read all of these instructions before attempting to begin repairs.
- The specifications in this manual are subject to change without notice.

— Save These Instructions —

General Operating Instructions

- *Therabath®Pro™* paraffin baths are designed for a wide variety of medical and cosmetic applications. They are normally used in hospitals, clinics, sports facilities, nursing homes, beauty salons, spas, and in the home.
- Users dip their hands, elbows, or feet into the bath to form a layer of paraffin on their skin. The paraffin provides a long-lasting heat treatment for the appropriate area. After the paraffin cools, the user removes the solidified paraffin and discards it.
- For more specific user instructions including indications and contraindications, see the *Therabath®Pro™* Operator's Manual, which is included with every new unit.

Technical Specifications

- Unit Capacity 2.72 kg of paraffin wax
- Average Operating Temperature 52.2–56.7 degrees C
- Absolute Operating Temperature 51.1–59.4 degrees C
- Paraffin Wax Melt Time 8–10 hours
- Energy Usage 0.5 kWh per 24 hours
- Ambient Operating Air Temperature 18.33–29.4 degrees C
- Control Thermostat Bimetallic Snap Action
- High Limit (Safety) Thermostat Bimetallic Snap Action (manual reset)

Service Procedures

Equipment Needed

In order to service a *Therabath®Pro™* paraffin bath, you will need the following items:

- 3/8" nut driver;
- Flat blade screwdriver with blade width of 4.0–5.5 mm and a shaft length of 10 cm.;
- A pair of pliers;
- Thermometer: We recommend a thermometer with temperature scale range of 32–82 degrees C., divisions every 0.1 degree C., and with an immersion depth of 79 mm., suitable for measuring paraffin wax melt points. Thermometers that meet the ASTM 14C standard are ideal;
- Four liters of mineral oil for testing the *Therabath®Pro™* (if not testing with *Theraffin®* paraffin);
- Snap Action Thermostat (S.A.S.) Assembly [Part Number 840-wo-34020]: Includes Control Snap Action Thermostat (S.A.S.), High Limit S.A.S., 0.090 Aluminum Plate, 0.150 CPVC spacer under High Limit S.A.S., 0.125 CPVC spacer under Control S.A.S., four 4-40 x 3/8" nylon screws, four 4-40 nylon nuts, and one Thermopaper for under the S.A.S. assembly.

Visual Inspection

Inspect the *Therabath® Pro™* unit for any of the following problems:

- Make sure the lid and grille are not damaged. If they are, you may purchase new ones from the factory. See "Ordering Parts," page 8.
- Check the power cord. If it is damaged, it should be replaced.
- Check that the white plastic case is not broken and that it fits together properly.
- Check to see that there are no scratches in the enamel coating on the tank and that there is no rust in the tank.

If there are any problems, contact the factory for further advice.

Checking the Temperature of the Bath

Follow this procedure to test the temperature calibration of the *Therabath® Pro™* unit. If the temperature of the unit is within tolerances and the unit is operating normally, no repairs are necessary.

Note: Mineral oil may be used in place of paraffin for calibration testing purposes. Average melt time for paraffin is 8–10 hours. Average warm-up time for mineral oil is 2–3 hours.

1. Place 2.72 kg. (6 lbs.) of solid paraffin in the bath, or carefully pour 4 liters of mineral oil into the tank. Plug in the unit and let it warm up to operating temperature (8–10 hours for paraffin, or 2–3 hours for mineral oil).
2. Place a very accurate thermometer in the bath. The thermometer used to measure the bath temperature should be a laboratory quality thermometer for measuring wax melt points, such as the one listed in "Equipment Needed," page 3.

Hint: Take a sheet of cardboard large enough to cover the entire bath opening and, using a pencil, punch a hole just large enough for the thermometer probe to fit through. Lay the cardboard across the unit and place the thermometer through the hole so that the probe tip is held about 2.5 cm from the bottom of the tank and is centered relative to the sides of the tank. Fasten the thermometer in this position using adhesive tape (this will eliminate calibration errors due to cold or hot air drafts).

3. After inserting the thermometer, wait approximately 30 minutes for the temperature of the bath to stabilize. (Opening and closing the cover and adding a cool object such as a thermometer will cause the temperature in the bath to change. In addition, the thermometer will need to warm up, making necessary the 30-minute wait.)
4. Record the temperature reading when the pilot light comes on, and also record the highest temperature of the bath during one entire heating and cooling cycle (approximately 10–15 minutes). The temperature should read between 51.1–59.4 degrees C. (the absolute operating temperature range).
5. Repeat steps 3 and 4 three or four more times to determine if the unit is operating properly.

CAUTION: Because temperature measurements are critical in determining if the *Therabath® Pro™* unit is operating correctly, it is important that you use a calibrated thermometer and that you have the calibration of the thermometer periodically checked.

If the pilot light remains illuminated continuously for more than the normal cycle time (10–15 minutes), if the pilot light does not come on at all, or if the unit does not fall within the absolute operating temperature limits, the unit is not operating correctly. Disconnect the unit, remove the paraffin or mineral oil (see "Removing the Paraffin or Mineral Oil,"

page 5) and follow the procedure for replacing the S.A.S. Assembly, page 7.

Note: If the unit does not heat up at all and you are unable to remove the paraffin, the S.A.S. Assembly can be replaced with the solidified paraffin left inside the bath.

Removing the Paraffin or Mineral Oil

CAUTION: Do not pour liquid paraffin or mineral oil out of tank, as some will run down the joint between the tank and the lip of the case, causing the unit to deteriorate and fail. Do not use a glass or metal cup to empty the tank as these may scratch the surface of the tank, causing it to corrode.

Removing Mineral Oil

- If you have used mineral oil to test your *Therabath® Pro*,™ use a plastic or paper cup to empty it. Fill the cup by dipping it in the mineral oil, then emptying the cup into your container of mineral oil. When the bath is nearly empty, you can tilt it on its side so that it is easier to remove the last cupfuls of the oil. After you have emptied as much as you can with the cup, soak up the residue of oil and wipe the tank clean with paper towels.
- Be sure to avoid dripping mineral oil on the seam of the tank and the case, so that oil does not enter the inside of the unit.

Removing Paraffin Wax

- If you have used *Theraffin®* paraffin to check the operating temperature, and the operating temperature of the unit is correct, the unit can be left on for normal use.
- If the unit is working correctly but you need to relocate the unit, or if testing dictates replacement of the S.A.S. assembly due to an improper operating temperature, the following method should be followed for removing the paraffin:
 - Remove the grille from inside the tank (if present).
 - Unplug the *Therabath® Pro*™ and allow the paraffin to solidify overnight.
 - After the paraffin is solid, plug in the unit for a few minutes, or just until the cake of paraffin loosens from the sides and bottom of the unit.
 - After the paraffin is slightly loosened from the sides, unplug the unit.
 - Press down firmly on one end of the paraffin, tipping the opposite end up. Then lift out the cake of paraffin. Be careful to avoid dripping.
 - Blot up any remaining paraffin in the tank with paper towels. If any solidified paraffin remains inside or on the outside of the unit, soften it carefully with a hair drier or heat gun, and blot it with a paper towel.
 - Clean the unit with a soapy cloth, and rinse with a clean cloth wrung out in hot water. Then wipe the unit dry.

Figure 1: Schematic/Wiring Diagram of Therabath® Pro™

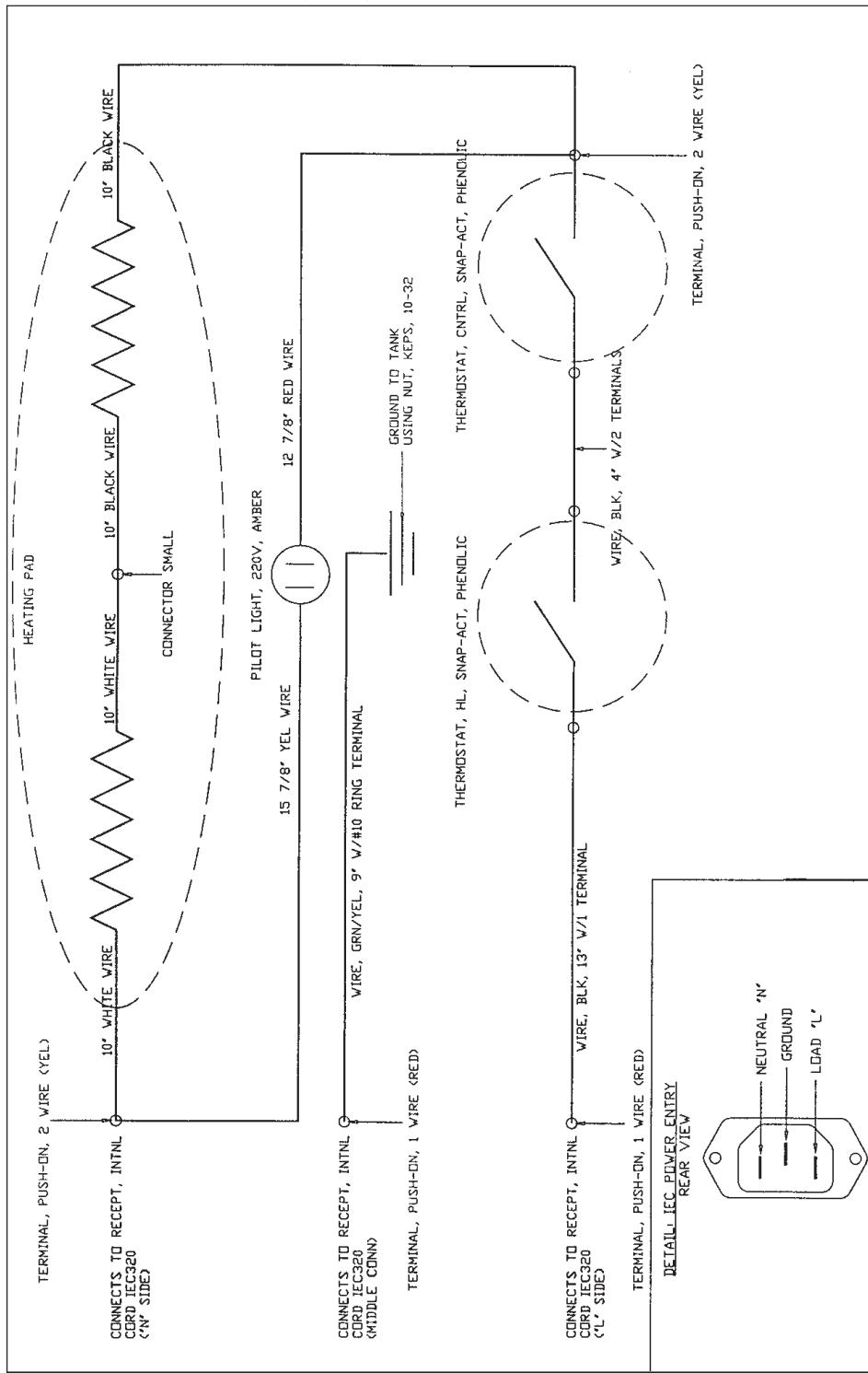
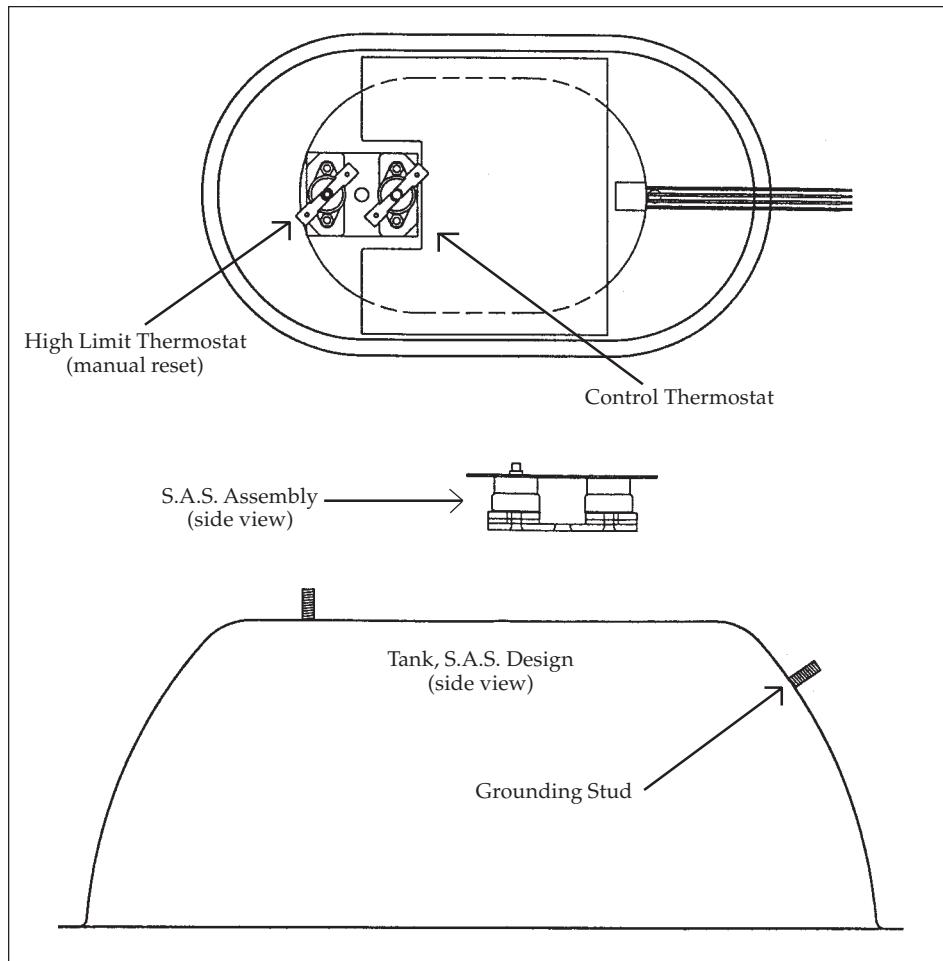


Figure 2: Bottom and Side Views of Inside Therabath®Pro™ Tank



Replacing the Snap Action Thermostat (S.A.S.) Assembly

If it is necessary to replace the thermostat assembly in your *Therabath®Pro™* bath, call the factory to order a Snap Action Thermostat (S.A.S.) Assembly Kit. **IMPORTANT:** Please provide the serial number of the *Therabath®Pro™* unit so the proper kit can be sent.

The following are instructions for replacing the thermostat assembly in a *Therabath®Pro™* unit. Refer to Figure 2, located on page 7, for drawings of the inside of the unit.

1. Open the *Therabath®Pro™* paraffin bath case by removing the four screws holding the case together. Take care not to damage the case when you open it.
2. Locate the alignment pins in the case halves and note where they are. They will be reused when the unit is reassembled. Do not remove them unless they are loose.
3. Inspect the inside of the *Therabath®Pro™* paraffin bath for damage.
 - Check the general appearance of the inside of the case for any problems.
 - Check for matting of any of the fiberglass insulation due to paraffin wax or mineral oil in the insulation.

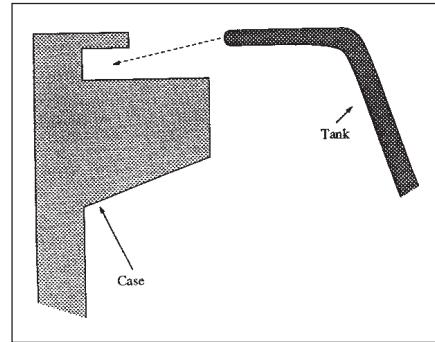
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- Check for any loosening of or damage to the heating element pad.
- Check that all electrical connections are normal (see Figure 1, page 6).
- Check the condition of all the wires.

If there are any problems, contact the factory for further advice before continuing.

4. Locate the S.A.S. Assembly to be replaced (see Figure 2, page 7). The thermostats are located on the bottom of the bath. They are mounted on an aluminum plate and CPVC spacers.
5. Disconnect the wires from the old thermostats. The connections to the thermostats are push-on connectors. Remove them by grabbing them with a pliers and pulling them straight off. Do not pull on the wires.
6. Remove the 10-32 nut between the High Limit and Control thermostats. (NOTE: Assembly may be stuck to the heating pad. A twisting motion may help loosen assembly.)
7. Discard the old S.A.S. Assembly.
8. Place the new S.A.S. Assembly over the 10-32 stud on the bottom of the tank. The High Limit thermostat (with manual reset button) **must be** closest to the end of the heating pad (see Figure 2). Thread on the 10-32 nut and torque to 10 inch-pounds.
9. Attach the short black lead between the thermostats on one side as shown in Figure 1, page 6.
10. Attach the long black lead to the High Limit thermostat, and attach the joined red and white/black lead to the Control thermostat as shown in Figure 1.
11. Replace any of the four alignment pins referred to in step 2.
12. Reassemble the unit so the insulation is not bunched up, and the lip of the tank is properly seated in the groove on the case halves all the way around (see Figure 3). The wires inside the case must not be pinched between the case halves.
13. Re-thread the four screws removed in step 1. It may be useful to put the unit on its side, thread the screw from the top and hold the nut from the bottom with a pencil or other object which fits into the recessed hole in the case. Tighten the screws until snug. Do not overtighten the screws.
14. Test the unit for proper operation before using (see "Checking the Temperature of the Bath," page 4).

Figure 3: Cross Section of Case Groove and Tank Lip



Ordering Parts

To order a Snap Action Thermostat (S.A.S.) Assembly Kit or any other needed part, please call the factory at **651-430-1200**; fax your order to **651-439-9733**; or e-mail us at paraffinbath@wrmed.com.

IMPORTANT: Please include the serial number or date of manufacture of the **Therabath®PRO®** paraffin bath, your shipping address, fax number, and e-mail address (if applicable) with your order.

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